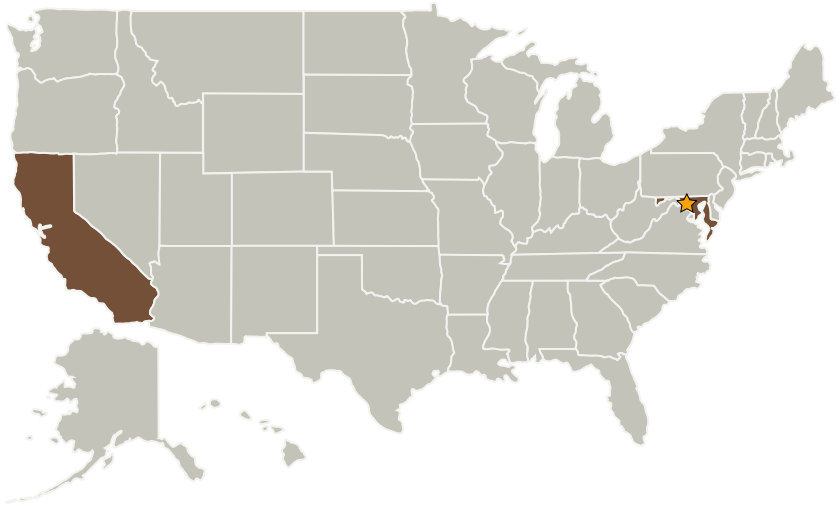
Holographic Image Plane Projection Integral 3D Display, Phase I

Completed Technology Project (2006 - 2006)

Project Introduction

In response to NASA's need for a 3D virtual reality environment providing scientific data visualization without special user devices, Physical Optics Corporation (POC) proposes a new Holographic Image Plane Projection Integral (HIPPI) 3D display that projects real moving (video rate) 3D color images in air. These 3D images will appear to a viewer as real, opaque (hidden line obscuration), volumetric 3D images over a wide look-around field-of-view (180 to 360 deg.) with high-fidelity realism. The proposed HIPPI-3D display consists of a high-speed, high-resolution, full-color projector, a spinning beam scanner, beam-forming optics, and a lightweight, transparent, spatially multiplexed (thin strip) off-axis reflective holographic projection screen. By projecting 2D perspective views of a 3D object, via the strip hologram, and by scanning multiple strips at 30 Hz, a multiplanar integral volume 3D image is created in the air in front of the curved screen. The screen and the projector can be set up and disassembled very quickly. In Phase I, POC will conduct a detailed feasibility study by analytical design supported by experimental verification, and a proof-of-concept demonstration setup. Phase II will focus on optimizing the system design and component technologies to complete a fully operational prototype.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
Physical Optics Corporation	Supporting Organization	Industry	Torrance, California

Primary U.S. Work Locations	
California	Maryland

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.3 Human Health and Performance
    - TX06.3.3 Behavioral Health and Performance